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10/560,767	12/13/2005	Eugene S. Rubin	20030073	5153
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BAE SYSTEMS			BONZELL, PHILIP J	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,767	<b>Applicant(s)</b> RUBIN, EUGENE S.	
	<b>Examiner</b> PHILIP J. BONZELL	<b>Art Unit</b> 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583).

a. For Claims 1-3, figure 1 of Fischer '201 discloses deploying the towed IR decoy (3) and the IR signature (lines extending from the decoy). Column 5, lines 34-36 of Fischer '201 teaches "if the decoy was not hit by the missile, it can be retracted again and maintained in an inoperative position until the aircraft is again attacked". Column 5, lines 20-21 teaches, "the radiation from the decoy antenna 3 is much more intense than the radiation of the aircraft". Fischer '201 is silent about the use of a laser as the powering source for the decoy, however, figures 1 and 4 of Ohmer '583 teach a laser source for powering an infrared decoy. Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201 with the laser source of Ohmer

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'583 in order to power a decoy as is well known and used in the art as a laser provides a fast, reliable power source with enough energy to create a large IR decoy signal.

b. Column 3, lines 9-16 of Fischer '201 discloses, "an aircraft C is provided with a warning antenna 1, and with a decoy means 3 which is connected by connecting means 2 to the aircraft C so that the decoy means 3 is dragged behind the aircraft during flight at a distance determined by the length of the connecting means 2. The decoy means 3 can be retracted into the fuselage of the aircraft where it is normally carried, unless a pursuing missile approaches the aircraft". Fischer '201 is silent about the decoy being retracted at approximately 10,000 feet. However, since Fischer '201 teaches that the decoy can be retracted at any time when the aircraft is not being pursued by a missile, it would have been obvious to someone of ordinary skill in the art at the time of the invention to know that the decoy could be retracted at 10,000 feet or any other altitude when there is no missile threat and to reduce drag.

2. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583) as applied to claim 1 above, and further in view of Loucks (US Patent #5269132). Fischer '201 and Ohmer '583 are silent about masking the infrared signature engine. The abstract of Loucks '132 teaches, "the apparatus consists of a plurality of overlapping hollow panels each having a truncated cone shape supplied with a liquid coolant such that the coolant absorbs

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heat from the surfaces of the panels and converts the liquid to a vapor. The vapor created by this heat absorption is injected from an end opening of a panel between the panels and the exhaust gases of the jet engine to form a boundary layer". Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201 and Ohmer '583 with the engine mask of Loucks '132 in order to reduce the infrared signature of the engine so that incoming missiles are less attracted to it.

3. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583) and Loucks (US Patent #5269132) as applied to claim 4 above, and further in view of Sweeny (US Patent #6055909).

c. For Claim 5, Fischer '201, Ohmer '583, and Loucks '132 are silent about the use of rapid modulation to increase the intensity of the decoy, however, column 8, lines 36-42 of Sweeny '909 teaches, "Varying the intensity of the IR radiation intensity emitted by the decoy can be used to deceive the seekers of some missile employing intensity discriminants other than just the centroid scheme described above. In one preferred IR radiation intensity modulation pattern depicted in FIG. 4, the radiant intensity is varied from somewhat higher to somewhat lower than the aircraft engine's IR signature". Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to

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modify Fischer '201, Ohmer '583, and Loucks '132 with the modulation of Sweeny '909 in order properly avoid a missile strike.

d. For Claim 6, Fischer '201 and Ohmer '583 are silent about increasing the exhaust obscurant. Column 1, lines 22-24 of Loucks '132 teaches "injecting various coolants into the engine combustion chambers", and Claim 1 teaches, "controlling the supply of liquid coolant". Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201 and Ohmer '583 with the controlling of exhaust obscurant as taught in Loucks '132 in order to mask the infrared signature of the engines in order to reduce the risk of missiles being attracted to the aircraft.

4. Claims 7, 8, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583) and Bull (US Patent #5136295).

e. For Claims 7, 8, and 11, figure 1 of Fischer '201 discloses deploying the towed IR decoy (3) and the IR signature (lines extending from the decoy). Column 5, lines 34-36 of Fischer '201 teaches "if the decoy was not hit by the missile, it can be retracted again and maintained in an inoperative position until the aircraft is again attacked". Column 5, lines 20-21 teaches, "the radiation from the decoy antenna 3 is much more intense than the radiation of the aircraft". Fischer '201 is silent about the use of a laser as the powering source for the decoy, however, figures 1 and 4 of Ohmer '583 teach a laser source for powering

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an infrared decoy. Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201 with the laser source of Ohmer '583 in order to power a decoy as is well known and used in the art as a laser provides a fast, reliable power source with enough energy to create a large IR decoy signal.

f. While Ohmer '583 teaches the use of a laser to power the infrared source it is silent about using fiber optic cables to relay the information, however, figure 13 of Bull '295 teaches a high power laser (40) powering the decoy through fiber optic cables (41). Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201 and Ohmer '583 with the fiber optic cables of Bull '295 in order to power a decoy as is well known and used fiber optic cables to provide a path for a laser to power a system as a laser provides a fast, reliable power source with enough energy to create a large IR decoy signal, in addition this also would allow for the laser to remain in the aircraft as it is an expensive piece of equipment and could be saved should the decoy be destroyed.

g. For Claim 12, column 3, lines 9-16 of Fischer '201 discloses, "an aircraft C is provided with a warning antenna 1, and with a decoy means 3 which is connected by connecting means 2 to the aircraft C so that the decoy means 3 is dragged behind the aircraft during flight at a distance determined by the length of the connecting means 2. The decoy means 3 can be retracted into the fuselage

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of the aircraft where it is normally carried, unless a pursuing missile approaches the aircraft”.

5. Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583) and Bull (US Patent #5136295) as applied to claim 7 above, and further in view of Brum (US Patent #6571714). Fischer '201, Ohmer '583, and Bull '295 are silent about the use of heating elements in the infrared decoy. However, claim 18 of Brum '714 teaches, "a plurality of heating elements...within the infrared augments device". Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201, Ohmer '583, and Bull '295 with the heating elements of Brum '714 in order to create an infrared source that is well known and tested.

6. Claim 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583) and Bull (US Patent #5136295) as applied to claim 12 above, and further in view of Loucks (US Patent #5269132). Fischer '201, Ohmer '583, and Bull '295 are silent about masking the infrared signature engine. The abstract of Loucks '132 teaches, "the apparatus consists of a plurality of overlapping hollow panels each having a truncated cone shape supplied with a liquid coolant such that the coolant absorbs heat from the surfaces of the panels and converts the liquid to a vapor. The vapor created by this heat absorption is injected from an end opening of a panel between the panels and the exhaust gases of the jet



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engine to form a boundary layer". Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201, Ohmer '583, and Bull '295 with the engine mask of Loucks '132 in order to reduce the infrared signature of the engine so that incoming missiles are less attracted to it.

7. Claims 14-16, 19, and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583), Bull (US Patent #5136295), and Loucks (US Patent #5269132).

h. For Claims 14-16, 19, and 20, figure 1 of Fischer '201 discloses deploying the towed IR decoy (3) and the IR signature (lines extending from the decoy). Column 5, lines 34-36 of Fischer '201 teaches "if the decoy was not hit by the missile, it can be retracted again and maintained in an inoperative position until the aircraft is again attacked". Column 5, lines 20-21 teaches, "the radiation from the decoy antenna 3 is much more intense than the radiation of the aircraft". Column 3, lines 9-16 of Fischer '201 discloses, "an aircraft C is provided with a warning antenna 1, and with a decoy means 3 which is connected by connecting means 2 to the aircraft C so that the decoy means 3 is dragged behind the aircraft during flight at a distance determined by the length of the connecting means 2. The decoy means 3 can be retracted into the fuselage of the aircraft where it is normally carried, unless a pursuing missile approaches the aircraft". Fischer '201 is silent about the use of a laser as the powering source for the decoy; however, figures 1 and 4 of Ohmer '583 teach a laser source for powering

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an infrared decoy. Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201 with the laser source of Ohmer '583 in order to power a decoy as is well known and used in the art as a laser provides a fast, reliable power source with enough energy to create a large IR decoy signal.

i. While Ohmer '583 teaches the use of a laser to power the infrared source it is silent about using fiber optic cables to relay the information, however, figure 13 of Bull '295 teaches a high power laser (40) powering the decoy through fiber optic cables (41). Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201 and Ohmer '583 with the fiber optic cables of Bull '295 in order to power a decoy as is well known and used fiber optic cables to provide a path for a laser to power a system as a laser provides a fast, reliable power source with enough energy to create a large IR decoy signal, in addition this also would allow for the laser to remain in the aircraft as it is an expensive piece of equipment and could be saved should the decoy be destroyed.

j. Fischer '201, Ohmer '583, and Bull '295 are silent about masking the infrared signature engine. The abstract of Loucks '132 teaches, "the apparatus consists of a plurality of overlapping hollow panels each having a truncated cone shape supplied with a liquid coolant such that the coolant absorbs heat from the surfaces of the panels and converts the liquid to a vapor. The vapor created by this heat absorption is injected from an end opening of a panel between the

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panels and the exhaust gases of the jet engine to form a boundary layer”.

Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201, Ohmer '583, and Bull '295 with the engine mask of Loucks '132 in order to reduce the infrared signature of the engine so that incoming missiles are less attracted to it.

8. Claim 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583), Bull (US Patent #5136295), and Loucks (US Patent #5269132) as applied to claim 14 above, and further in view of Small (US Patent #5786786) and de La Chapelle (US Patent #4832433).

a. Both Fischer '201, Ohmer '583, Bull '295, and Loucks '132 are silent about the various length of cables which would create an extended IR signature, however, column 1, lines 31-41 of Small '786 teaches, "A modern sophisticated radar system can readily distinguish a strong point-return from the signature of a full-size aircraft. Large aircraft have complicated signatures which include features such as extended size with multiple scattering points, scintillation of the signal amplitude as the aircraft maneuvers, and various dynamic effects such as jet engine modulation (JEM). Therefore, the effectiveness of a decoy against a modern sophisticated radar system may be increased with a complex and dynamic signature return containing the features of a full-size, maneuvering

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aircraft.” Therefore it is well known that an extended IR signature is produced by an aircraft and therefore would provide the best decoy signature.

b. De La Chapelle '433 teaches in claim 20, "varying the length of at least one of said fiber-optic cables to thereby alter the phase of the optical energy being conveyed in that cable.” Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201, Ohmer '583, Bull '295, and Loucks '132 with the aircraft signature of Small '786 and the varying cable lengths of de La Chapelle '433 in order to create a decoy that gives a more accurate aircraft signature.

9. Claim 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583), Bull (US Patent #5136295), and Loucks (US Patent #5269132) as applied to claim 14 above, and further in view of Brum (US Patent #6571714). Fischer '201, Ohmer '583, Bull '295, and Loucks '132 are silent about the use of heating elements in the infrared decoy. However, claim 18 of Brum '714 teaches, "a plurality of heating elements...within the infrared augments device". Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201, Ohmer '583, Bull '295, and Loucks '132 with the heating elements of Brum '714 in order to create an infrared source that is well known and tested.

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10. Claim 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer (US Patent #3339201) in view of Ohmer (US Patent #6304583) as applied to claim 1 above, and further in view of Bull (US Patent #5136295). While Ohmer '583 teaches the use of a laser to power the infrared source it is silent about using fiber optic cables to relay the information, however, figure 13 of Bull '295 teaches a high power laser (40) powering the decoy through fiber optic cables (41). Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to modify Fischer '201 and Ohmer '583 with the fiber optic cables of Bull '295 in order to power a decoy as is well known and used fiber optic cables to provide a path for a laser to power a system as a laser provides a fast, reliable power source with enough energy to create a large IR decoy signal.

### ***Response to Arguments***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Applicant's arguments, see pages 8-12, filed 10/03/2008, with respect to the rejection(s) of claim(s) 1-21 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ohmer (US Patent #6304583).

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHILIP J. BONZELL whose telephone number is (571)270-3663. The examiner can normally be reached on M-Th 8-5;.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on (571)272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. J. B./  
Examiner, Art Unit 3644

/Michael R Mansen/  
Supervisory Patent Examiner, Art Unit 3644

pjb